Assignment (due Mar. 30)

1. Determine the Laplace transform of the following signals.
   
   (a) \( \cos(3t)u(t) \)
   
   (b) \( e^{-10t}u(t) \)
   
   (c) \( e^{-10t}\cos(3t)u(t) \)
   
   (d) \( e^{-10t}\cos(3t-1)u(t) \)
   
   (e) \( (2-2e^{-4t})u(t) \)
   
   (f) \( (t-1+e^{-10t}\cos(4t - \pi/3))u(t) \)

2. Determine the inverse Laplace transform of each of the following functions.

   (a) \( X(s) = \frac{s + 2}{s^2 + 7s + 12} \)

   (b) \( X(s) = \frac{s + 1}{s^3 + 5s^2 + 7s} \)

   (c) \( X(s) = \frac{2s^2 - 9s - 35}{s^2 + 4s + 2} \)

   (d) \( X(s) = \frac{3s^2 + 2s + 1}{s^3 + 5s^2 + 8s + 4} \)